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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/807,689      | 03/24/2004  | Michio Ono           | 12262/6             | 4422             |

757 7590 04/27/2007  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

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| EXAMINER |
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CANTELMO, GREGG

|          |              |
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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1745

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 04/27/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                                      |                                   |  |
|------------------------------|--------------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/807,689 | <b>Applicant(s)</b><br>ONO ET AL. |  |
|                              | <b>Examiner</b><br>Gregg Cantelmo    | <b>Art Unit</b><br>1745           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.  
     4a) Of the above claim(s) 2-4, 6, 8 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 7, 9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>SEE OFFICE ACTION</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of the species of claim 5 in the reply filed on April 9, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 3, 6, 8 and 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 9, 2007.
3. Applicant has elected the particular combination recited in claim 5. Upon election of this species, the Examiner disagrees with the claims identified as those which read on the claimed species. Notably claim 5 requires a species which contains both a compound of formula (IV) and a compound of formula (VI) and/or (VII). This specific species combination is not the same as those species recited in claims 2 and 4. While each of claims 2 and 4 recite similar formulas I and IV. The species of claim 5 is particular in that it requires a combination of compound formulas and is significantly different in scope from the single compound formula requirements in the product species of claims 2 and 4. Thus claims 2 and 4 have been withdrawn from consideration as to non-elected species.
4. Claim 7 has been rejoined as to a subsequent elected species since it does not appear that the invention of species 5 is taught by the prior art of record. Action on the merits of claims 1, 5, 7, 9 and 10 is as follows.

***Response to Preliminary Amendment***

5. In response to the preliminary amendment received March 24, 2004, the specification has been amended as indicated.

***Priority***

6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

7. The information disclosure statement filed July 27, 2004 has been placed in the application file and the information referred to therein has been considered as to the merits.
8. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

***Drawings***

9. The drawings received March 24, 2004 are acceptable for examination purposes.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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10. Claims 1, 5, 7, 9 and 10 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The exact genus of the Mesogen-containing organic group critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The specification refers to preferred examples of Mesogen-containing organic groups, but preferred examples is not clearly limiting and would at least suggest other groups were appreciated but not disclosed (see page 28, ll.12-27). Clarification is requested.

11. Claims 1, 5, 7, 9 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed mesogen structure is not clearly defined by the original description and the absence of an exact genus of structures which are considered to be mesogen structures raises an enablement issue regarding the claims.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, 7, 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 1, 5, 7, 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission

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amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the upper and lower limits to each variable in each claimed compound. For example n41 has no range of values to define it and thus may or may not include zero. Furthermore by failing to clearly define the bounds for each variable constituent of the claimed compounds the breadth of the claimed compound is rendered vague and further renders the particular intermediate compounds and resultant final compound difficult to ascertain. Clarification is respectfully requested.

b. Claim 5 recites the limitation "R 5's". There is insufficient antecedent basis for this limitation in the claim. Claim 5 first recites a compound (IV) having R5 but does not clearly require plural R5s as recited thereafter. Thus the exact number of R5s in the claim is indefinite.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

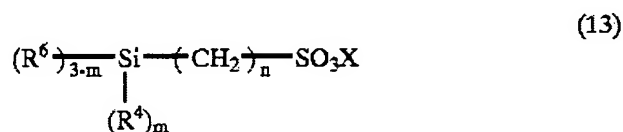
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1, 7, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0062970 (Nomura).

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Nomura discloses a proton exchange membrane in paragraph 75 having the following structure:

[0075] The 36<sup>th</sup> aspect of the present invention is the method of the 35<sup>th</sup> aspect for producing the proton conducting membrane, wherein the acid containing compound (D) is represented by the general formula (13):



[0076] (wherein, R<sup>4</sup> is methyl, ethyl, propyl or phenyl group; R<sup>6</sup> is Cl, or OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub>, OC<sub>6</sub>H<sub>5</sub>, OH or OCOCH<sub>3</sub> group; X is hydrogen, an alkali metal, alkyl group or ammonium group; "m" is 0, 1 or 2; and "n" is an integer of 1 to 20).

Selecting R<sup>4</sup> and R<sup>6</sup> to be OH, recognizing that (CH<sub>2</sub>)<sub>n</sub> is exemplary of the claimed divalent material (L4) and that SO<sub>3</sub>X, wherein X is hydrogen, reads on the functional group attached to L4, the resultant material of Nomura and that of claim 7, and thus claim 1, are identical and anticipate the invention of claims 1 and 7.

The material is provided in the electrolyte film in a membrane electrode assembly and further in a fuel cell having the membrane (paragraph 25 as applied to claims 9 and 10).

### ***Double Patenting***

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims

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are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1, 5, 9 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of copending Application No. 10/969530. Although the conflicting claims are not identical, they are not patentably distinct from each other because at least one of the claimed combinations in the copending application recites the same proton exchange membrane structure such as claim 1 which includes a compound having at least one of formulas I, III and IV. The phrase at least one teaches that combination of these structures were appreciated and encompassed in the claims (as applied to claims 1 and 5).

The compound is used in an MEA (see claim 12 as applied to claim 9) and in a fuel cell comprising the proton exchange membrane (see claim 14 as applied to claim 10).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### **Conclusion**

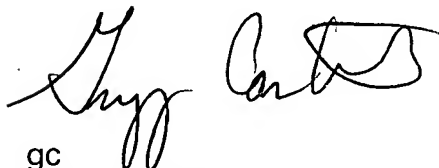
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16. While no prior art rejections have been applied to the initial elected species of claim 5, since there are numerous 112 1<sup>st</sup> and 2<sup>nd</sup> paragraph issues to this species, no clear statement of patentability can be made at this point in prosecution.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
gc  
April 23, 2007

Gregg Cantelmo  
Primary Examiner  
Art Unit 1745